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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,435

03/31/2004

Dennis Postupack

01638.0010.NPUS02

3804

22930

7590

03/28/2008

HOWREY LLP

C/O IP DOCKETING DEPARTMENT

2941 FAIRVIEW PARK DR, SUITE 200

FALLS CHURCH, VA 22042-2924

EXAMINER

LAZORCIK, JASON L

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

03/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/813,435	<b>Applicant(s)</b> POSTUPACK ET AL.	
	<b>Examiner</b> JASON L. LAZORCIK	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,6-16,46,49,55-59,61 and 64-88 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6-16,46,49,55-59,61 and 64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 74 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner has found no basis on the specification as originally filed for the limitation wherein "the temperature of the salt bath is at least about 25°C above the preheating temperature".

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 6, 7, 8, 10, 11, 12, 13, 14, 46, 49, 55, 56, 57, 58, 59, 61, 64, 65, 66, 70, 71, 72, 73, and 75-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent (GB 1,010,164) assigned to PITTSBURGH PLATE GLASS CO and hereafter referred to as GB'164.

Regarding the identified claims, the GB'164 reference teaches (Example IV-Samples 60-77, Page 12, lines 16-44) a method wherein a "polished" soda-lime silica

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glass plate is preheated to 1050°C (565°C) for 10 minutes, immersed in a molten salt bath of potassium nitrate for 15-60 seconds at 1050°F, removed from the bath and maintained at 950°F (510°C) for 15 minutes.

With respect to the substrate immersion time, Applicant acknowledges that typical chemical strengthening operations utilize an immersion or dip time of 30 minutes to 4 hours (see pg 18, ¶(1047)). Although the prior art explicitly sets forth embodiments wherein a glass plate is immersed into a molten salt bath periods as short as 15 seconds, the reference is silent regarding the particular claimed immersion periods of "about 10 seconds or less" and "about 0.5 seconds to about 30 seconds" as required by dependent claims 6, 49, 64, 77, and 78. Although the prior art does not explicitly set forth Applicants particularly claimed immersion period, it is the Examiners position that said immersion period would have represented a merely trivial extension over the process explicitly set forth in the prior art.

Specifically, both the prior art process and the claimed invention make use of immersion periods which one of ordinary skill would recognize first as significantly shorter than the "typical" processing parameters (e.g. about 3 to 60 seconds for the prior art and the claimed invention versus 1,800 to 14,400 seconds for Applicants admitted "typical process"). In the context of these "typical" immersion conditions, the claimed and prior art immersion times would be viewed as patentably indistinguishable from each other.

That is, one of ordinary skill in the art would recognize that the degree of temper achieved in a chemically strengthened glass sheet is a direct function of the immersion

time or contact time with the molten salt bath (e.g. solid state diffusion). All other variables held constant, a reduction in the immersion time would predictably result in a decrease in the ion diffused layer of the glass substrate and thereby result in a decreased temper effect in the chemically tempered glass sheet. It is the Examiners position that the relationship between immersion time and glass temper is both predictable and established in the art and that one of ordinary skill in the art would have been motivated to try shorter immersion times than those explicitly disclosed in GB '164 as a means to enhance the rate of tempered sheet production. It follows, absent any compelling evidence of unexpected results from the claimed process conditions, that the claimed process conditions of "about 10 seconds or less" and "about 0.5 seconds to about 30 seconds" would have been derived through no more than routine experimentation and optimization of the prior art disclosed process.

While the instant reference teaches a "typical" composition of soda lime silicate glass which is suitable for the inventive method (page 2, lines 31-42), it is silent regarding the strain point and annealing point associated with the composition. Regarding Claim 56, the instant reference clearly indicates that acceptable processing temperatures may range "as high as 1200°F to 1400°F" (Page 3, Lines 51-58)

As evidenced in the disclosure by Grubb (US 3,498,773), a glass material having a composition within the GB'164 experimental range has an annealing point of 1033°F and a strain point of 986°F (Column 9, Lines 66-75). Therefore the GB'164 reference is

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understood to inherently teach dipping the glass article in a salt bath “at least above the annealing point temperature” and to maintain said article at a temperature “between the strain point temperature and about 150°C below the strain point temperature”.

With particular respect to Applicants newly added **claims 73 and 75 to 88**, GB'164 teaches that “it is generally preferable to preheat the surfaces of the glass sheets to be treated to a temperature approximating that at which the molten potassium salt bath is maintained prior to contacting the glass sheets with the treating bath. However, it will be realized that the glass can be heated to a higher temperature than that at which the potassium salt is maintained, and **the converse is also true.**” (Page 2, lines 97-105)

Regarding Claims 7, 8, 10 through 12, and 65 to 66 the reference teaches “the potassium nitrate salt can be employed either alone or in conjunction with other potassium salts, e.g., potassium chloride, to constitute the potassium salt treating bath...An exemplary mixed potassium salt treating bath within the purview of the present invention is one having about 70 mole percent potassium nitrate and 30 mole percent potassium chloride. However, the advantages attendant to the method of the present invention can be secured using a potassium nitrate potassium chloride treating bath having a potassium nitrate mole percent ranging from 50 percent to 100 percent. (page 4, lines 89-116)

**Claim 16 and 69** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over GB'168. In accord with the instant

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claim, the GB'168 reference teaches that after treating of the glass article, a thermoplastic layer or "scuff resistant coating" may be applied to the surface of the glass article (page 5, lines 102-111). In the event that the instant disclosure is deemed not to anticipate the limitations set forth in the instant claim, it is the Examiners position that one of ordinary skill in the art would have been well aware and fully equipped to perform these actions. Specifically, it would have been obvious to subject the salt treated glass article to subsequent processing steps as routinely practiced in the art (e.g. cleaning residual salt from the treated article and/or applying surface treatments or coatings to said article).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.



Claims 15 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent (GB 1,010,164) as applied under 35 U.S.C. 102(b) above in the rejections of Claim 1 and 61, respectively.

Claim 15, 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over GB'164. The instant reference teaches use of a polished glass substrate however it is silent regarding the nature of the polishing process or that it should specifically be performed by "flame polishing". Flame polishing is a common technique used by practitioners in the Art as a method of attaining a polishing glass performs. Absent any unexpected results to the contrary, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize "flame polishing" to produce the disclosed "polished" glass substrate.

Claims 9 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over British Patent (GB 1,010,164) as applied under 35 U.S.C. 102(b) above in the rejections of Claim 1 and 61, respectively, and in further view of Duke (US 3,573,072). GB'164 teaches that the molten salt bath may comprise a mix of potassium salts, however said reference is silent regarding the specific use of potassium sulfate. The Duke reference teaches that "While the nitrate bath may be used at temperatures up to about 600' C. or so, the salt tends to decompose at such high temperatures and severely attack the article surface as well as containers and other equipment. For higher temperature work then, it is convenient to employ a molten salt bath composed of potassium chloride and potassium sulfate and based on a eutectic mixture of these salts. This is a mixture of about 52% KCl and 48% K<sub>2</sub>SO<sub>4</sub> which melts at about 690' C." With the Duke reference

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in hand, one of ordinary skill in the art at the time of the invention seeking to perform the GB'164 process at temperatures above about 600°C would obviously made use of a salt bath comprising potassium sulfate as taught by Duke. The use of potassium sulfate would have been an obvious approach due to the greater stability and lower chemical reactivity of this composition at elevated temperatures.

Claims 74 is rejected under 35 U.S.C. 103(a) as being obvious over British Patent (GB 1,010,164) as applied under 35 U.S.C 102(b) in further view of GB 1,346,747.

The GB'164 reference teaches preheating the glass sheet to the a temperature “approximating” that of the molten salt bath and as identified in the rejection under 35 U.S.C 102(b). The GB'164 reference further indicates that the glass may be preheated to “a higher temperature” than the treating bath and that “the converse is also true”. The reference does not explicitly limit process to the claimed temperature range wherein “the temperature of the salt bath is at least about 25°C above the preheating temperature”.

With this point in mind, the GB'747 reference teaches a method for chemically strengthening a glass sheet by contact with a bath of molten alkali metal ions having a diameter greater than the alkali metal ions present in the glass. The reference explicitly discloses that (Page 1, lines 57-78);

“the ion exchange process upon which this type of strengthening is based obeys the conventional laws of diffusion. **The depth reached by the large alkali metal**

ions increases with the duration and temperature of the treatment and depends upon the composition of the glass under consideration...if the thickness in the compression is decided upon, the duration of the treatment will become shorter, the higher the temperature adopted. In reality however, the higher the temperature rises, the more rapidly do the stresses induced by the ion exchange relax. This means that, for a given thickness of compressive layer, the strengthening effect diminishes when the temperature rises. It follows that, if the thickness under compression and the strengthening required are imposed values, there exists an optimum treatment temperature which corresponds to the minimum duration of said treatment, that is to say the most economical process.”

The GB'747 reference is understood to teach that both immersion time in the molten bath and the temperature of the treatment steps are established as result effective variables of the strengthening process (page 1, Lines 57-78). Although GB '164 does not explicitly require claimed temperature ranges, the GB'747 reference clearly indicates that it is well within the prevue of one of ordinary skill in the art to optimize both immersion time and bath temperature in order to achieve an adequate substrate strengthening in the most economical fashion.

### ***Response to Arguments***

Applicant's arguments, see page 2, filed January 7, 2008, with respect to the rejection(s) of independent claims 1, 46, 61 and dependent claims 6, 49, and 64 under 35 U.S.C. §102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of British Patent (GB 1,010,164) under 35 U.S.C. §103(a).

With particular respect to independent claim 73, Applicants alleges that the GB'163 reference fails to address the specific limitation requiring a step of "dipping the formed glass article in a molten salt bath having a temperature more than said preheating temperature" in conjunction with a step of "maintaining the glass article at a temperature between the strain point temperature and about 150 degrees below". This allegation is held to be unpersuasive for the following reasons.

Specifically, Applicant first acknowledges that GB'164 teaches a salt bath having a higher temperature than the preheat temperature for the glass sheet. It follows that Applicants argument alleging otherwise on this matter is held to be unpersuasive.

Now, with respect to Applicants allegation that the prior art does not teach a step of maintaining the glass sheet within the specified temperature range, it was noted in the final office action dated July 6, 2007 that the GB'164 reference teaches (pg 4, paragraph) removing the glass from a salt bath and maintaining said sheet at a temperature of 950°F (510°C). Looking to the Grubb '733 reference (Pg 4, paragraph 2), it is evident that a glass sheet having the same composition as that utilized in the GB'164 reference displays a strain point of 986°F (530°C). It follows that the GB'164

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step of maintaining the glass sheet at a temperature of 510°C in fact does read upon applicants claimed step of maintaining the sheet between the strain temperature (530°C) and 150°C below the strain temperature (380°C).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. LAZORCIK whose telephone number is (571)272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/

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Supervisory Patent Examiner, Art  
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JLL